



Smart Grid Implementation Workshop
Breakout Group Report

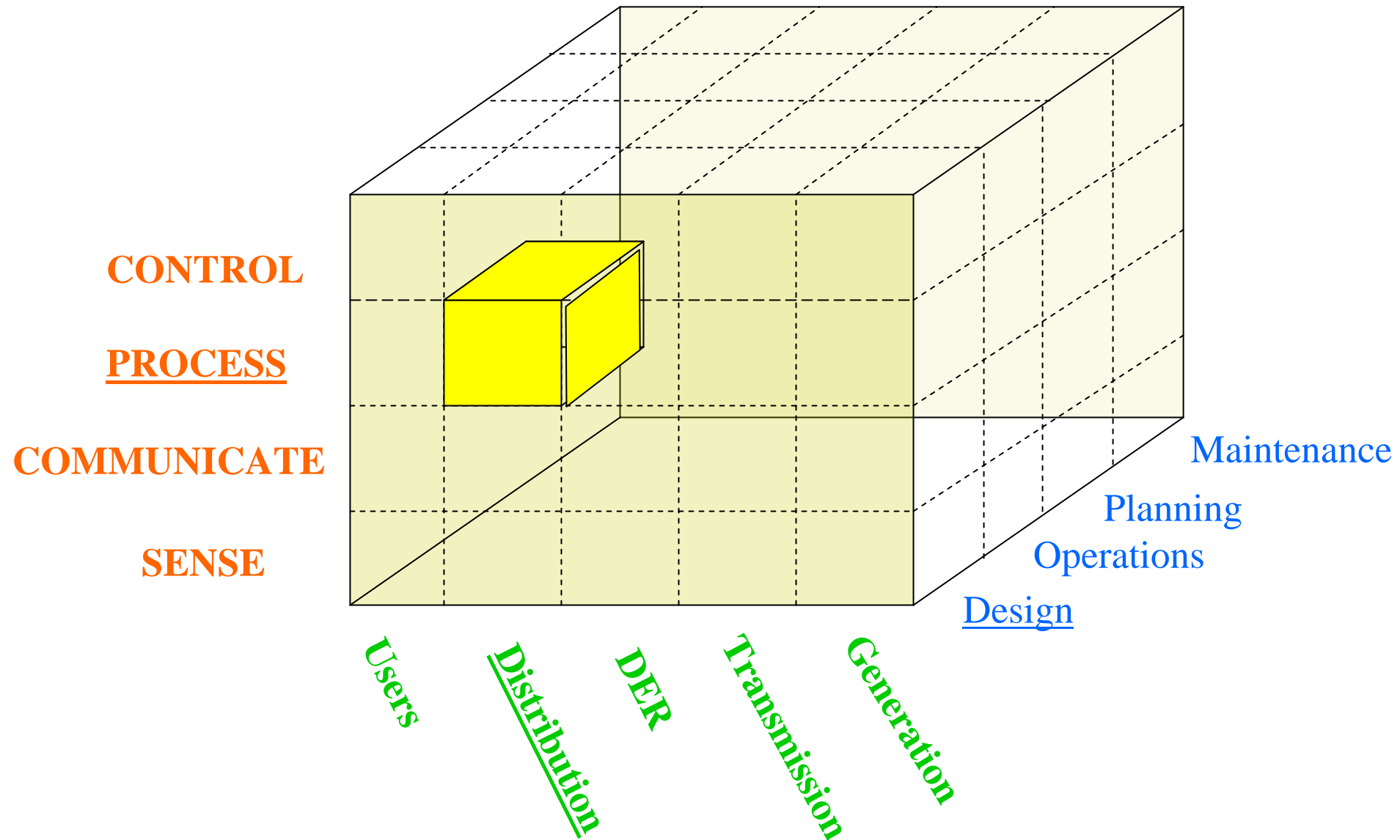
*Providing the Power Quality
for the Range of Needs in the
21st Century Economy*

June 20, 2008
Washington DC

Major Findings/Caveats

- The “Digital Economy” really means “Economy of the 21 st Century”
- Power Quality is a large concept that can be assessed by many parameters
- Cost is a foundational dimension of PQ (implementation and impact)
- An infinite number of Metrics can be imagined. It is necessary to define some framing context and how precisely the Metrics will be used, in order to allow a small number of Metrics to be highly meaningful :
 - ✓ Who is expected to use the Metrics : DoE to assess project proposals ? Utilities project managers ? City officials? Regulators ?
 - ✓ What are the appropriate view points to address a Characteristic so that everyone sees the same concepts behind very few words ?
 - ✓ Which scale to consider: specific technical projects of a City a State or a Nation ?
- Metrics can be used and easily accepted for relative comparison. Using absolute values of Metrics needs a lot of return of experience to be acceptable.

Metrics context for a given "Characteristic"





Metrics for Measuring Progress

Sense

- Number of PQ measurement points divided by number of customers

Communicate & Process

- Number of PQ incidents that you can identify and even better anticipate over time

Control

- Number of devices divided by the improvement in reliability indices
 - Determine how many controllable PQ devices have been sold and installed
 - Determine number of points that control PQ factor

Impacts

- Number of customer complaints regarding PQ issues
 - level of customer satisfaction with PQ on a scale of 1-10
 - duration of resolution to PQ complaint
- Number of Jurisdictions that have defined electric rate structure for PQ service levels based on societal and market needs



Issues with Data, Methods, Analysis

- PQ definition depends on perspective (IEC – EN - IEEE)
 - Customer classes have different definitions
 - Improved knowledge enabled by the Smart Grid
- Utilities and industry groups are a promising source of information
- The proposed Metrics are “Device” based and should be also “Function” based
- The Smart Grid will provide functions and measurements that are not available to establish the baseline today.



Path(s) Forward

- Raise awareness and establish liaisons with Utilities and Industry Groups that are a promising source of information
 - Establish outreach activities for PUCs
- Charter organizations to evaluate and report on the costs of various levels of PQ (implementation and impact)
- Get prepared to extract the value from huge amounts of new PQ data
- Increase national funding and support for developing new solutions and intelligence for improving PQ
- Develop educational programs for new generation of Smart Grid Engineers



Suggestions for DOE

- Get feedback on applying Metrics on 3 concrete examples
- Identify key topics and fund “Champions” to carry the recommendations forward
- Develop a plan for national Research Development & Demonstration Power Quality program
- Provide oversight and coordination across various professional and interest groups